

2 Sheets—Sheet 1.

THREAD SEPARATOR FOR SPINNING FRAMES.

Patented July 23, 1889.



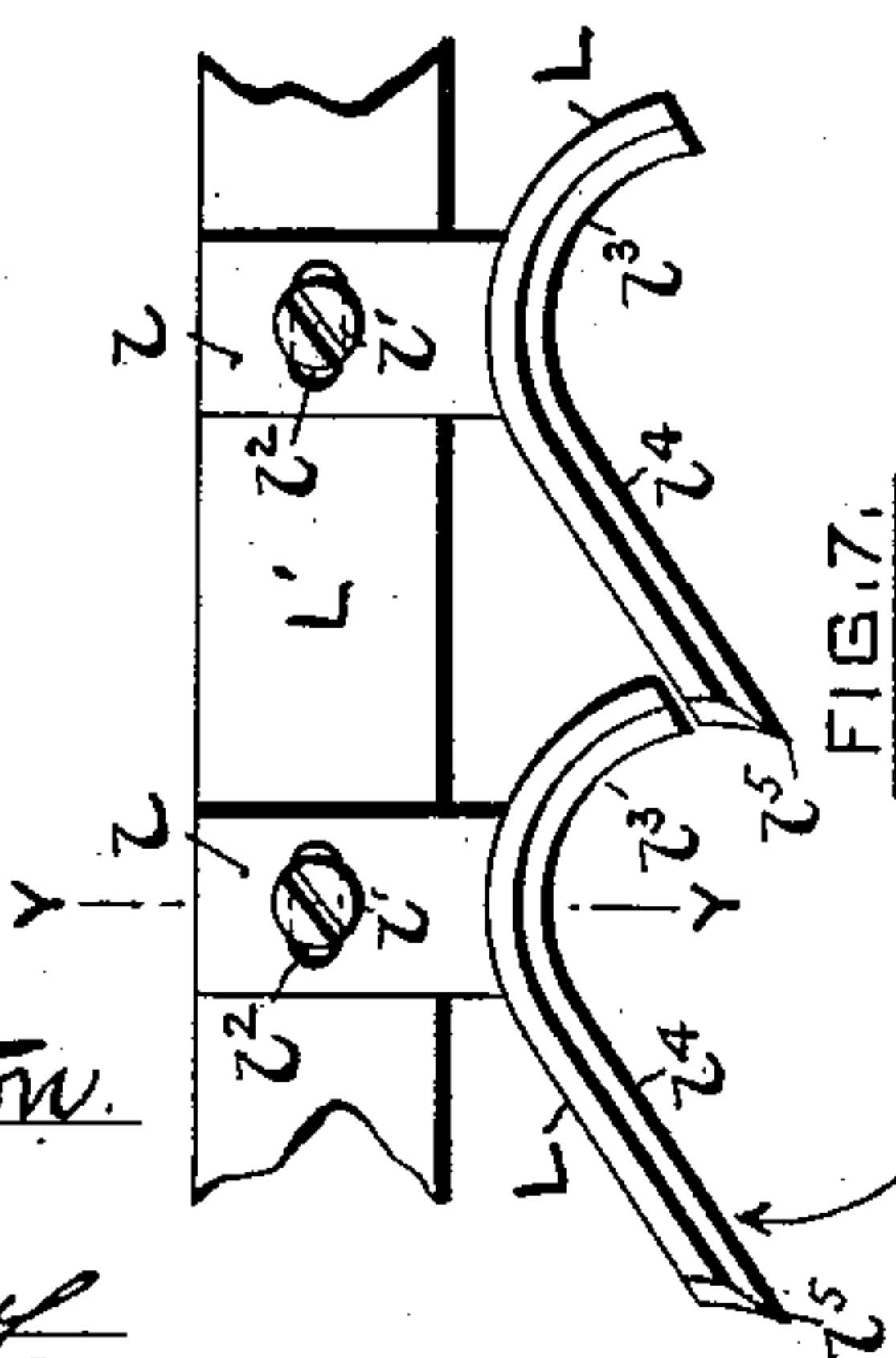
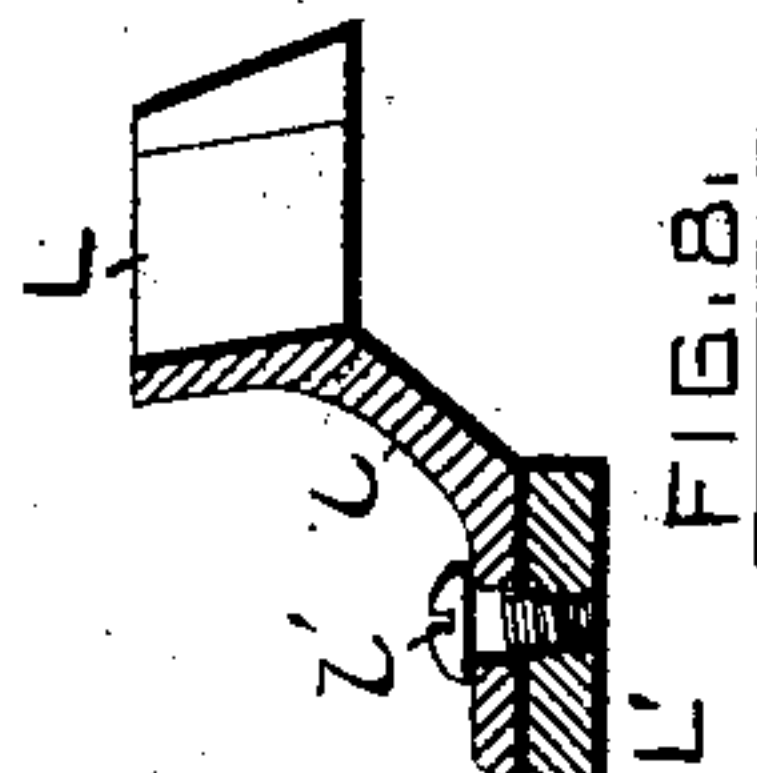
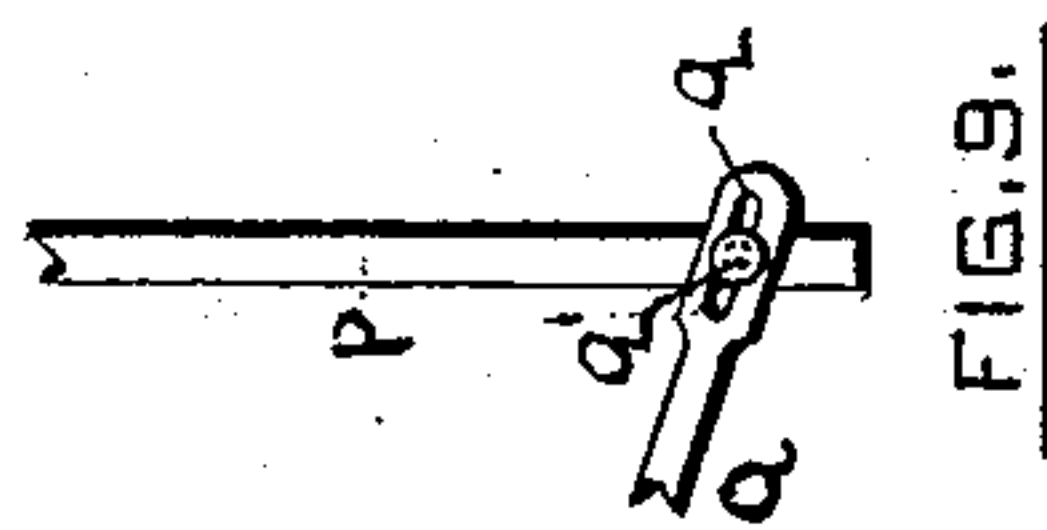
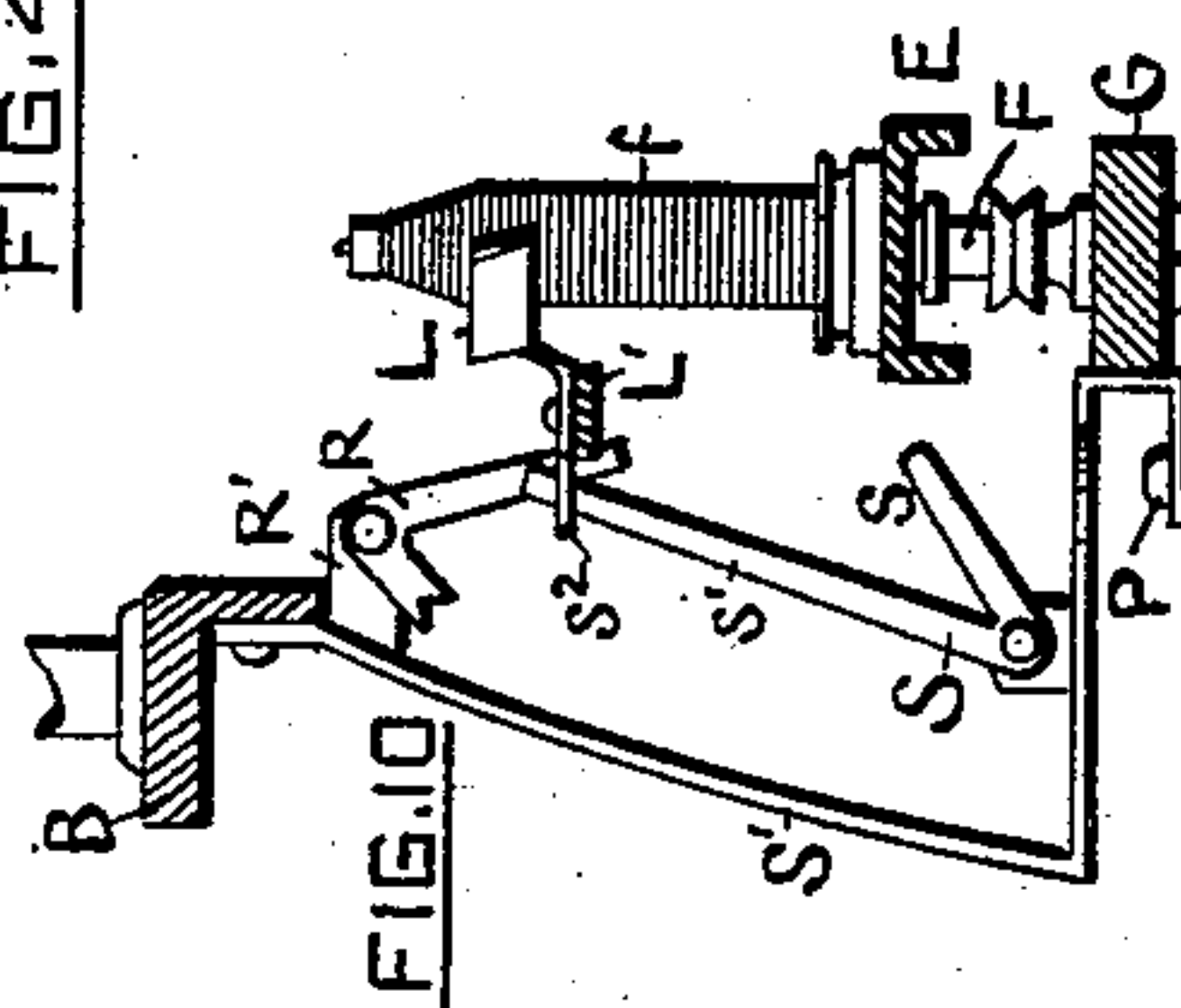
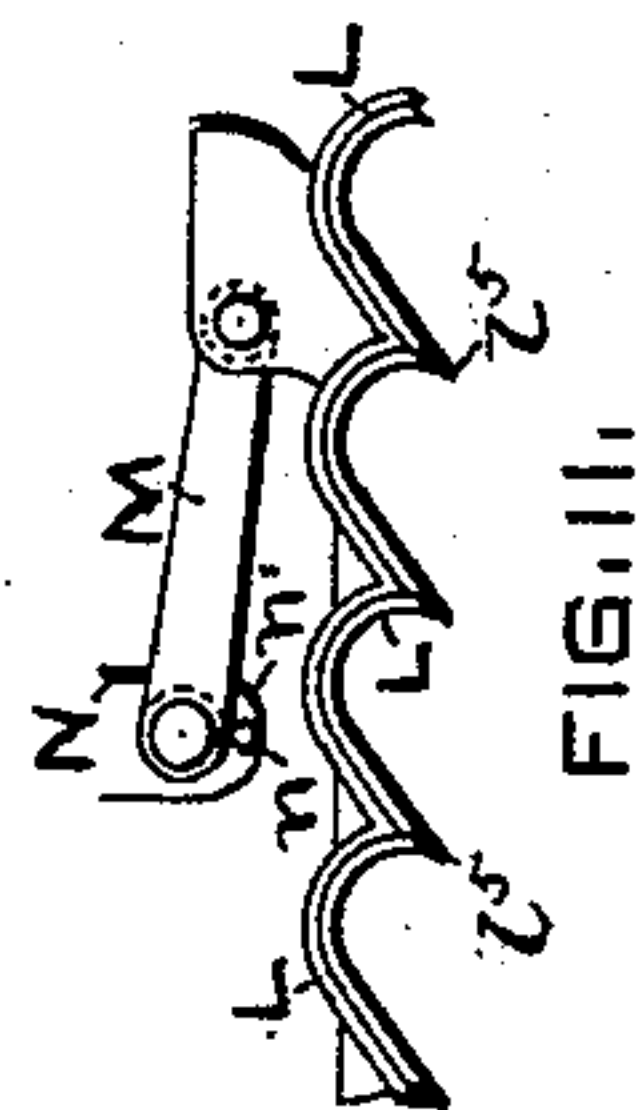
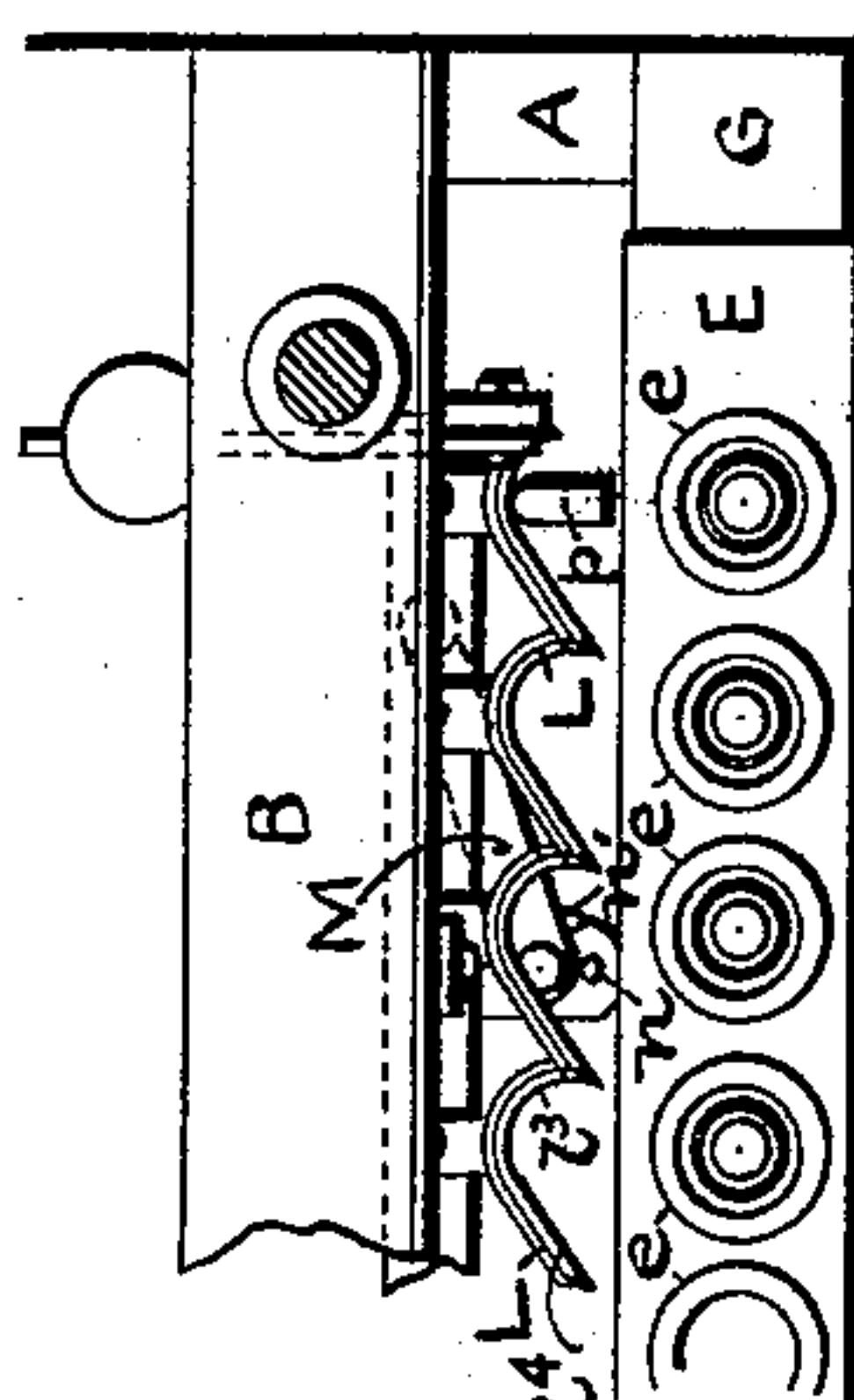
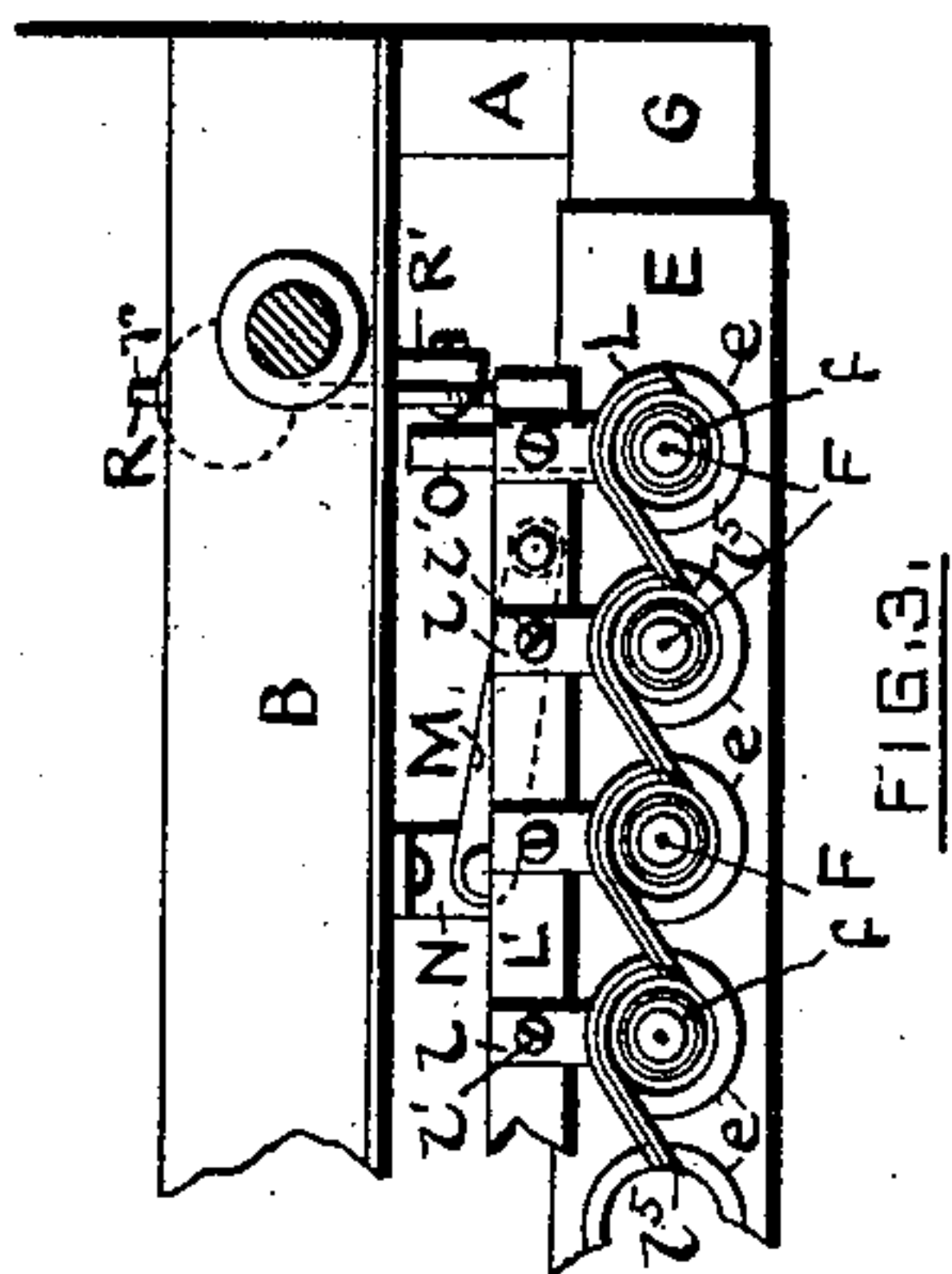
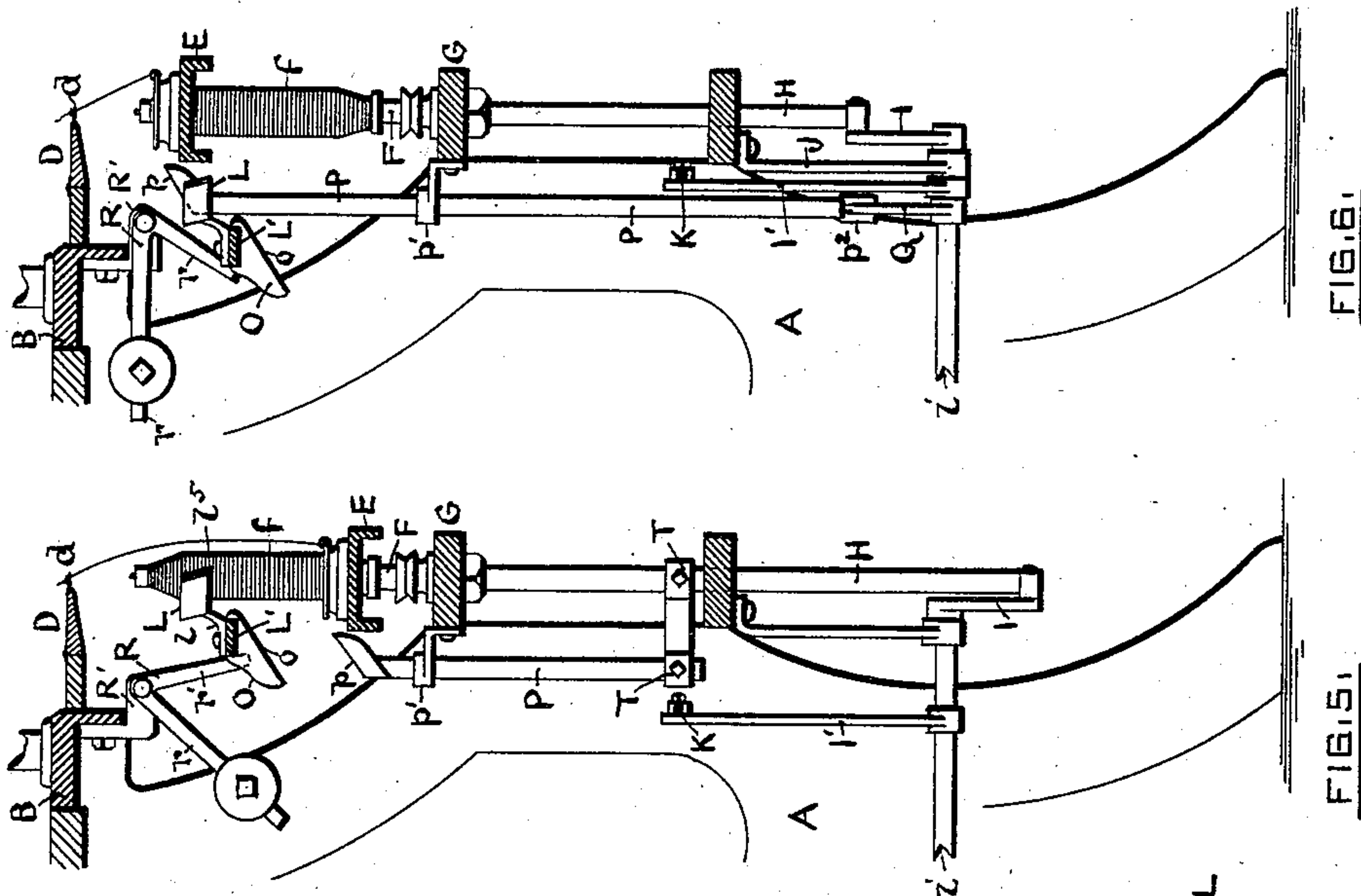
INVENTOR.

by William E. Sharples
Edson Salisbury Jones
Attorney

2 Sheets—Sheet 2.

No. 407,420.

Patented July 23, 1889.



WITNESSES.

Henry J. Stapleton.
Geo May

INVENTOR.

by William E. Sharples
Edson Salisbury Jones
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM E. SHARPLES, OF FALL RIVER, MASSACHUSETTS.

THREAD-SEPARATOR FOR SPINNING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 407,420, dated July 23, 1889.

Application filed June 4, 1888. Serial No. 276,024. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. SHARPLES, of Fall River, county of Bristol, and State of Massachusetts, have invented a new and useful Improvement in Thread-Separators for Spinning-Frames; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a description thereof.

10 This invention relates to what are known as the "separators" of a spinning-frame, which act to prevent the threads from coming in contact with each other or whipping together while being wound upon the bobbins; and it also relates to the means for moving the separators toward and from the spindles when the ring-rail falls and rises.

15 The invention consists in certain features of construction and arrangement hereinafter described and claimed.

20 In the accompanying drawings, Figure 1 represents a front view of as much of a ring-spinning frame embodying the invention as is necessary to an understanding of the same, the portion of the frame represented being shown as broken apart. Fig. 2 is a vertical transverse section of the frame on line *x x*, Fig. 1. Fig. 3 represents a top view of a portion of the frame with the drawing-rolls and guide-wire board and blocks removed and the separators in normal position, or nearest the spindles. Fig. 4 shows a similar view with the separators in their rearward position. Fig. 5 represents a vertical transverse section of a portion of the frame on line *x x*, Fig. 1, with the supports for the separator-bar removed, with the ring-rail near its lowest position, and the separators in their normal or forward position. Fig. 6 shows a similar view with the ring-rail in its highest position and the separators in their rearward position. Fig. 7 represents, on a larger scale, a top view of two separators attached to their bar. Fig. 8 shows a transverse section of the bar and a separator on line *Y Y*, Fig. 7. Fig. 9 represents a portion of the lever and rod for moving the separators backward, the two parts having a pin-and-slot connection. Fig. 10 shows a vertical transverse section of a portion of the frame with a modification of the means for retracting the separators. Fig. 11

shows a top view of a modified construction of separators.

A A are portions of the frame of the machine. B is the roller-beam thereof.

C C are the drawing-rolls.

D are the guide-wire blocks, and *d* the guide wires or eyes.

E is the ring-rail, and *e* the rings thereon.

F are the spindles, and *f* the bobbins.

G is the step-rail.

H H are the lifting-rods, through which the ring-rail is raised.

I I are levers which engage the lifting-rods, and are secured to transverse rock-shafts *i i*, respectively. I' I' are arms, also secured to said rock-shafts.

J J are the supports for the shafts *i i*.

K is a rod connecting the arms I' I', which rod is moved longitudinally in opposite directions by mechanism (not shown in the drawings) in a perfectly well understood way to cause the levers I I to raise the ring-rail.

All the foregoing parts of a spinning-frame are well known to manufacturers and users of such machinery.

L are the separators, which are made of metal or other suitable material, one being used for each spindle. I prefer to make each separator distinct from its neighbor and to provide each with a tang *l*, by which it can be secured by a bolt or screw *l'* to the bar L', running longitudinally of the frame, each tang *l* being preferably furnished with a slot *l''*, Fig. 7, to enable the separators to be adjusted with relation to each other, if desired. The bar L' lies in a horizontal plane and rests upon and is pivoted to crank-arms M, Figs. 1, 2, 3, and 4, and the arms themselves are pivoted upon suitable supports, as brackets N, secured to the roller-beam or other convenient part of the machine. The brackets N are furnished with pins or studs *n* and the hubs of the arms M with lugs *n'*, Figs. 1, 2, and 4, which act as stops to limit the forward swing of the arms, and consequently of the separators.

When the ring-rail is below the central point of its vertical movement, the separators are in their normal or forward position, standing with relation to the spindles as shown in Figs. 2, 3, and 5, and serve to prevent the

threads (which "balloon" or curve outwardly from the guide-eyes to the travelers) from coming in contact with and damaging each other.

5 In order the better to protect the threads from contact, I prefer to shape the front or face of each separator as shown in Fig. 7, where it will be seen that a portion l^3 of this face is curved or circular (and substantially
10 concentric with the spindles when the separators are in normal position, as shown in Fig. 3) and the remaining portion l^4 is tangent to the portion l^3 , or inclined forward therefrom. The inclined portion l^4 serves to gather in the
15 thread while revolving about the spindle in the direction of the arrow, Fig. 7, and gradually to force the thread toward the spindle, and the curved portion l^3 keeps the thread within a proper limit to prevent contact with
20 the thread on the right hand. I also prefer to give the front or face of the separator a rearward upward inclination, as shown in Fig. 8, so that said face shall conform to the outline of the ballooning thread, whereby
25 stronger yarn will be produced than would result were said face vertical. If the face of the separator were vertical, the thread would be bent by the ballooning over the angle formed by the face and top surface of the
30 separator, thereby causing the thread to drag over said angle and increasing the tension on the thread between the separator and the ring-traveler, producing weak yarn and a hard-wound bobbin, which are objectionable.

35 As the separators, when in normal position, overhang the ring-rail, it is necessary they should be retracted, so as not to interfere with the upward movement of the rail to its highest point. For this purpose the bar L' is
40 furnished with two or more blocks or plates O , having inclined faces o , and when the ring-rail has been raised a certain distance these blocks are engaged by inclined planes p on the upper ends of the rods P , which
45 rods are arranged to slide vertically through proper guides p' , Figs. 1 and 2. The lower ends of the rods P are engaged by arms Q , respectively secured to the rock-shafts i , so that as the ring-rail is raised by the action of
50 the levers I on the rods H the rods P are simultaneously raised by the action of the arms Q . When the inclined planes p engage the inclined planes o on the blocks O during the upward movement of the rods
55 P , the bar L' and its attached separators L will be moved rearwardly, swinging in the arc of a circle on the arms M , into the position shown in Figs. 4 and 6, and will be held there by the rods P , so as not to interfere
60 with the continued upward movement of the ring-rail. In order that the rods P shall be lowered as the ring-rail falls, the arms Q are arranged to pass through eyes p^2 on the lower ends of the rods, as shown in Figs. 1 and 2,
65 or are otherwise connected with the rods to secure such results, as by providing the arm

Q with a slot q and passing a pin q' through the slot and into the bar, as shown in Fig. 9. When the rods P have descended far enough to
70 allow the inclined planes o and p to come into contact, the bar L' and its separators L will gradually be moved toward the spindles and into normal position by bell-crank levers R , pivoted to lugs R' , secured to the roller-beam,
75 the arms r of which levers are weighted, and the arms r' arranged to engage the bar L' , as shown in Figs. 5 and 6.

As hereinbefore stated, the bar L' is pivoted to crank-arms M , which arrangement causes the bar to swing in the arc of a circle.
80 The ends l^5 of the separators are preferably arranged to project, when in normal position, forward beyond a line passing through the row of spindles, so that the curved or circular portion l^3 of the separator shall extend
85 around toward the front of the bobbin, and thereby retain the thread nearer the bobbin for a longer time and more surely prevent the threads from coming in contact with each other, and the pivotal points of the arms M
90 on the brackets N are located in a line in the rear of a line passing through the pivotal points of said arms on the bar L' , so that when the bar is swung rearwardly by the action of the rods P the points l^5 of the separators
95 will be swung away from the spindles to which said ends are nearest, thereby causing said points to clear full bobbins with certainty.

It will readily be seen that by causing the
100 separators to move away from the bobbins in the arc of a circle lying in a horizontal plane the separator ends or points l^5 can be brought farther around toward the front of the bobbins and said points clear full bobbins when
105 they are moved rearwardly than could be the case were the separators moved backward in a straight line at right angles to a line passing through the row of spindles.

In place of furnishing the bar L with blocks
110 O and the rods P with inclined planes p , the rearward movement of the separators may be secured by causing the rod P to engage one arm s of a bell-crank lever S , pivoted upon a bracket or support S' , as shown in Fig. 10,
115 the other arm s' of said lever passing through a slot in a tang s^2 on the bar L' , or being connected with the bar in any convenient manner.

Instead of making the separators L in separate pieces and securing them to the bar
120 L' , as hereinbefore described, the separators may be integral with each other and be secured to the bar, or the bar and separators may be cast or formed in one piece. The bar L'
125 may also be dispensed with and the series of separators be rigidly secured to each other or formed integral, as shown in Fig. 11. In place, also, of employing the arms Q to raise the rods P , the arms may be dispensed with
130 and the rods P be connected with the lifting-rods H , as shown by dotted lines in Fig. 1

and by full lines in Fig. 6, by means of bars T.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A separator for spinning-frames, having
5 a portion l^3 of its face curved or made circular and a portion l^4 made tangent thereto or inclined forward therefrom, and said face inclined rearwardly in an upward direction, and a support for the separator, which support is
10 exterior to and independent of the ring-rail, substantially as and for the purposes specified.

2. A separator for spinning-frames, having a portion l^3 of its face curved or made circular and a portion l^4 made tangent thereto or
15 inclined forward therefrom, and said face inclined rearwardly in an upward direction, substantially as set forth.

3. The combination, with the spindles, of a series of separators, crank-arms upon which
20 they are mounted to swing in the arc of a circle lying in a horizontal plane, whereby the outer ends or points of the separators may be brought farther forward and nearer to the spindles, supports for said arms, and means,
25 substantially as described, for giving a rearward movement to the separator, substantially as set forth.

4. The combination, with the spindles, of a series of separators, crank-arms upon which
30 they are mounted to swing in the arc of a circle lying in a horizontal plane, whereby the outer ends or points of the separators may be

brought farther forward and nearer to the spindles, supports for said arms, and means, substantially as described, for giving back- 35 ward and forward movements to the separators, substantially as set forth.

5. The combination, with the spindles of a spinning-frame, of a series of separators having ends l^5 , which, when in normal position, 40 project forward of a line passing through the spindles, arms and supports therefor, upon which arms the series of separators are mounted to swing in a horizontal plane in the arc of a circle, the pivotal points of the arms on 45 the supports being in the rear of a line passing through the points where the arms are pivoted to the series of separators, and means, substantially as described, for giving a rearward movement to the series of separators, 50 substantially as set forth.

6. The combination of a series of separators, crank arms upon which they are mounted to swing in a horizontal plane, supports for said arms, which supports are independent of 55 the ring-rail of the machine, a vertically-reciprocating rod, and means, substantially as described, between said rod and separators for giving a rearward movement to the separators, substantially as set forth.

WILLIAM E. SHARPLES.

Witnesses:

HERBERT H. HORTON,
EDWARD B. VARNEY.